REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

In response to the rejection of claims 23, 25, 26 and 28 under 35 U.S.C. §101, claims 25 and 28 have been cancelled and claims 23 and 26 have been amended so as to obviate this ground of rejection.

The rejection of all pending claims 1-28 under 35 U.S.C. §102 as allegedly anticipated by Gregerson '358 is respectfully traversed.

Gregerson describes node management in a scalable distributed computing environment. It is directed to an architecture and implementation of a scalable distributed computing environment which facilitates communication between independently operating nodes on a single network or on inter-connected networks, which may be either homogeneous or heterogeneous (see 1:5-12) It describes a dynamic, symmetrical, distributed, real-time peer-to-peer system comprised of an arbitrary number of identical (semantically equivalent) instances, i.e., kernels, that together form a logical tree. The kernels exhibit unified and consistent behavior. Each kernel resides at a network node that has one or more resources associated with it. The kernels dynamically locate one another in real-time to form and maintain a hierarchical structure that supports a virtually unlimited number of independently running kernels (see 2:46-65).

However, in contrast to the presently claimed invention, as new resources join (or rejoin) the Gregerson network, the kernel residing at each node, and thus each resource connected to that node, automatically and immediately becomes accessible to all applications in the system. This means in practice that each node seeks to exchange messages with all other nodes in the network as shown in Figure 14 of Gregerson (see 11:33-55). This is precisely what the presently

claimed invention teaches against, as in a tree-like hierarchy the root nodes can be overloaded with traffic.

In particular, the number of possible roles or levels that may be assumed by a Gregerson node is not limited and may be based on the particular requirements of the networking environment. (3:8-25). Again this is in complete contrast to the claimed invention which does seek to limit the levels that can be assumed by a node when it joins the network, by virtue of constraining the number of connections and the level of the parent node that the new node can form a vertical (primary) connection to.

In Gregerson, however, the resource layer registers application resources within a distributed computing system (PIPES) logical network (PLN) layer. The resource layer implements a persistent find capability which enables the locating of resources that have not yet been registered in the distributed computing system's logical network layer (PLN). The distributed computing system's logical network layer (PLN) maintains knowledge of the logical, hierarchical relationships of nodes within the PIPES network to enforce a dynamic administrative framework. The PLN is a hierarchical structure imposed by the system administrator on a set of machines executing kernels. These kernels unify at run time to form a hierarchical network with dynamically elected managers that manage a given level of the hierarchy. In PLN 33, the primary roles played by the various managers between the network manager and the area manager (e.g. domain manager and group manager) are essentially the same: to maintain communication with its parent and children and to route resource layer traffic. However, the logical network described above (i.e., PLN 33) does not operate to constraint the topology of the distributed computing system in the manner of the now claimed invention.

Gregerson does not teach a new node joining a network by requesting parent nodes to sever existing connections if no free connections are available. This is because Gregerson does not consider its network to be "grid-like" in the manner of the now claimed invention, i.e., with all nodes within the network forming the same number of connections to other nodes. In such a network, simply having sub-nodes broadcast login requests will not result in the requests generally being granted as the nodes already in the network are configured to form the maximum permitted number of connections wherever possible. Nothing in Gregerson teaches the node seeking entry to the network by identifying the lowest node in the network having horizontal connections and then asking this potential parent node to terminate the connection so they can join to that node instead.

The number of levels in PLN 33 is defined by Midlevel and Max Level. The kernels that have normal privileges are configured at MinLevel and are not managers. On the other hand, a kernel that is the Network Manager is configured at Max level and has the potential to become the Network Root. The configuration parameter MaxStatus imposes a ceiling on the highest level of which the kernel can be a manager. A kernel at a level n is termed to be a child of its parent kernel at level n+1 provided that the two kernels have the same name above level n. (7:34-44).

Accordingly, not all Gregerson kernels are optimally connected – some are "not managers". This can be contrasted with the now claimed invention where the nodes in the network are all capable of having k connections to other nodes, and substantially all nodes in the network have k connections, and the network is configured so that nodes seek out to maintain k connections whenever possible.

In summary, therefore, although Figure 14 of Gregerson shows a diagram similar to that of the applicant's in that the lines interconnecting kernels (nodes) relate to message flows in an Election process, it is clear from the description of Gregerson Figure 14 (11:33-55) that, if node #1 discovers a new node #2, then node #1 is made aware of all the nodes (say #3 and #4) that node #2 knows about. This would be similar to a situation in applicant's Figure 1a showing the prior art, but instead showing an additional connection, so that when node I forms a connection to node C, it would form a direct connection as well with node A.

The claimed invention does not do this, and indeed seeks to prevent this, as this type of topography can overload nodes at the root of the hierarchical tree such as node A shown in Figure 1B. In applicant's Figure 1B, node I will not form connections with node A just by having formed a connection with node C. Instead node I forms connections with nodes at its same level in the network hierarchy, i.e. at the same logical distance from A. In other words, the connections that can be formed in a network according to the claimed invention are strictly horizontal (to another node at the same level of the network hierarchy) or vertical (to a parent) to spread the traffic more evenly around the network. This problem is not addressed by Gregerson nor is a solution taught.

Nor does Gregerson consider the implications of how such a constraint may need to be enforced, namely, by requiring nodes with no free horizontal connections to terminate a suitable horizontal connection to enable a new node to be added to the network. (Suitability here implies that the terminating node is not the parent node of the terminated node).

Accordingly, the now claimed invention is patentably distinguished over Gregerson.

In view of the fundamental deficiencies of Gregerson already noted, it is not believed necessary at this time to detail the additional deficiencies of this reference with respect to other aspects of the rejected claims.

Accordingly, this entire application is now believed to be in allowable condition and a formal notice to that effect is respectfully solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /Larry S. Nixon/
Larry S. Nixon
Reg. No. 25,640

LSN:tlm
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100